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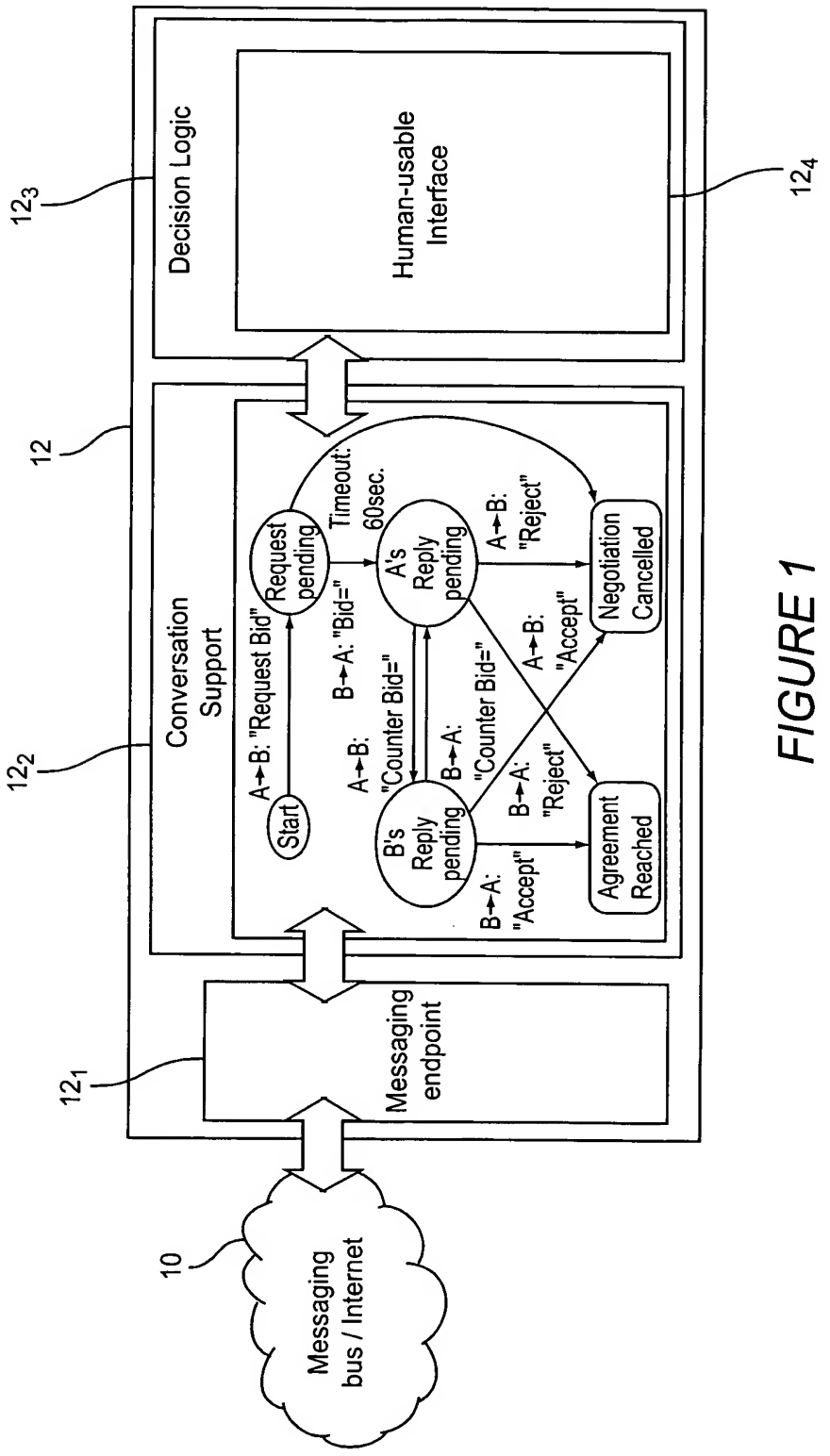

FIGURE 1

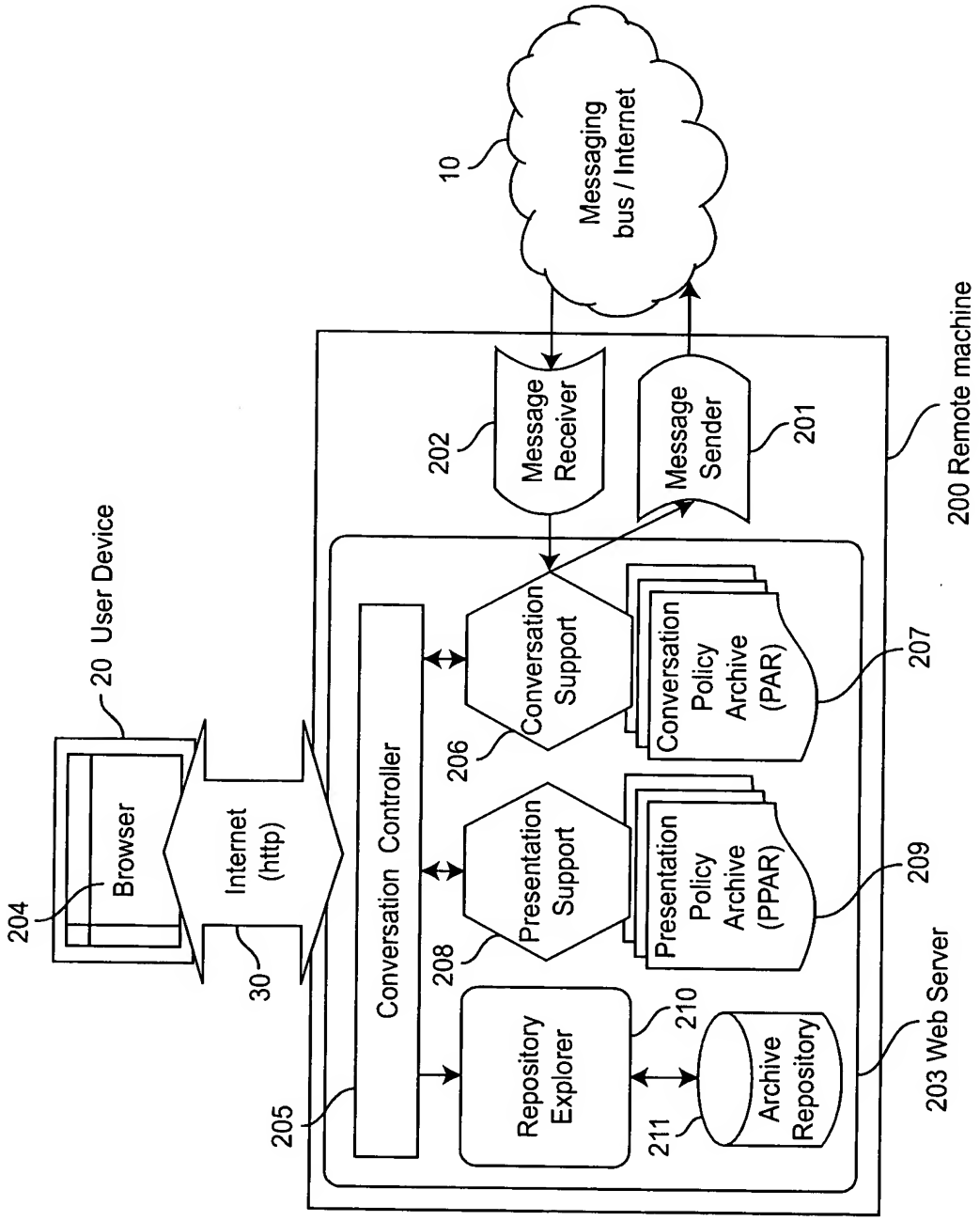
10
Messaging bus / Internet
202
Message Receiver
Message Sender
201
200 Remote machine
20 User Device
Conversation Support
Conversation Policy Archive (PAR)
207
206
Browser
Internet (http)
Conversation Controller
Presentation Support
Presentation Policy Archive (PPAR)
209
204
30
208
210
Repository Explorer
Archive Repository
205
211
203 Web Server

FIGURE 2

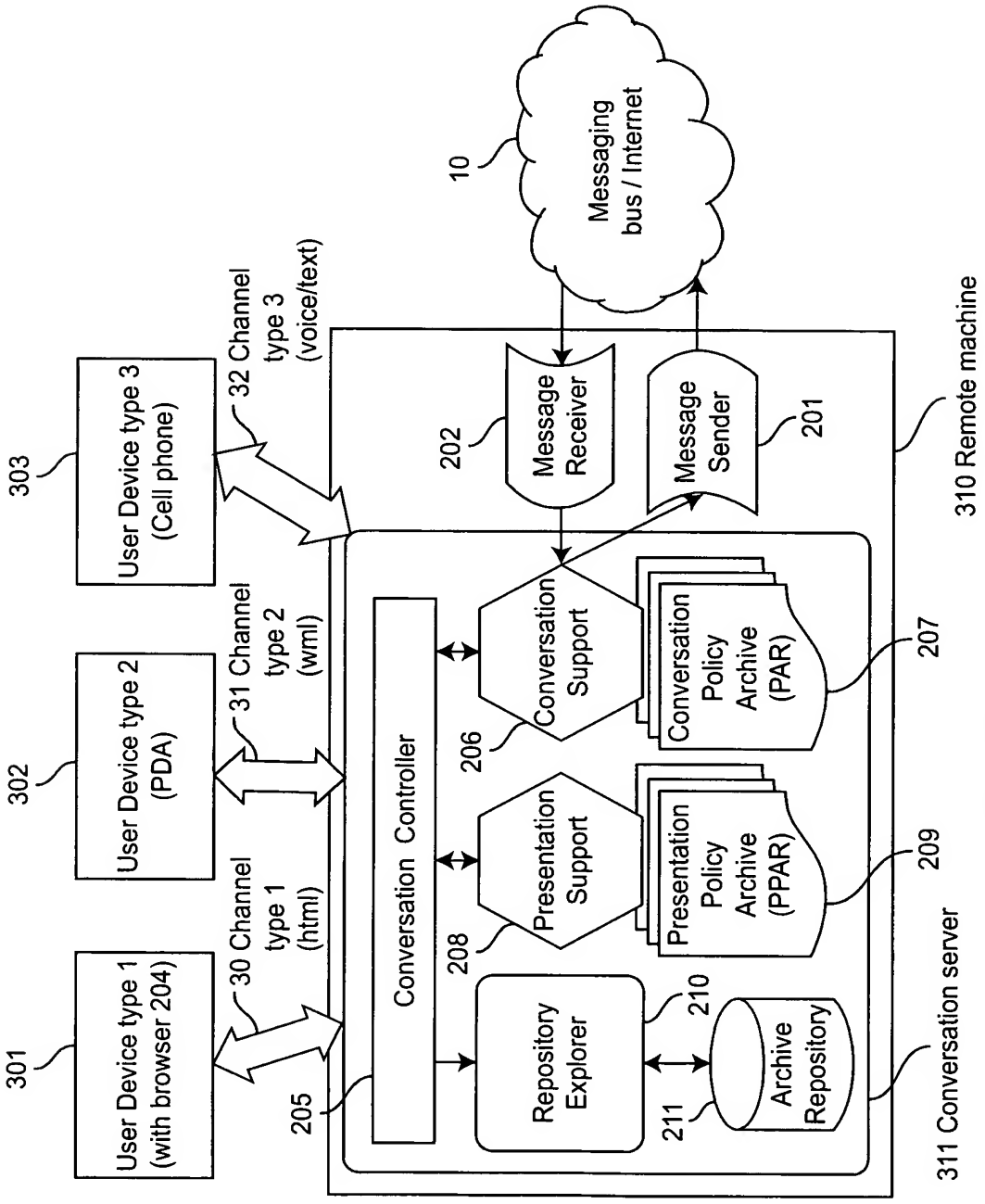
10
Messaging bus / Internet
303
User Device type 3 (Cell phone)
32 Channel type 3 (voice/text)
302
User Device type 2 (PDA)
31 Channel type 2 (wml)
301
User Device type 1 (with browser 204)
30 Channel type 1 (html)
202
Message Receiver
Message Sender
201
310 Remote machine
Conversation Controller
205
Conversation Support
206
Conversation Policy Archive (PAR)
207
Presentation Support
208
Presentation Policy Archive (PPAR)
209
Repository Explorer
210
211
Archive Repository
311 Conversation server

FIGURE 3

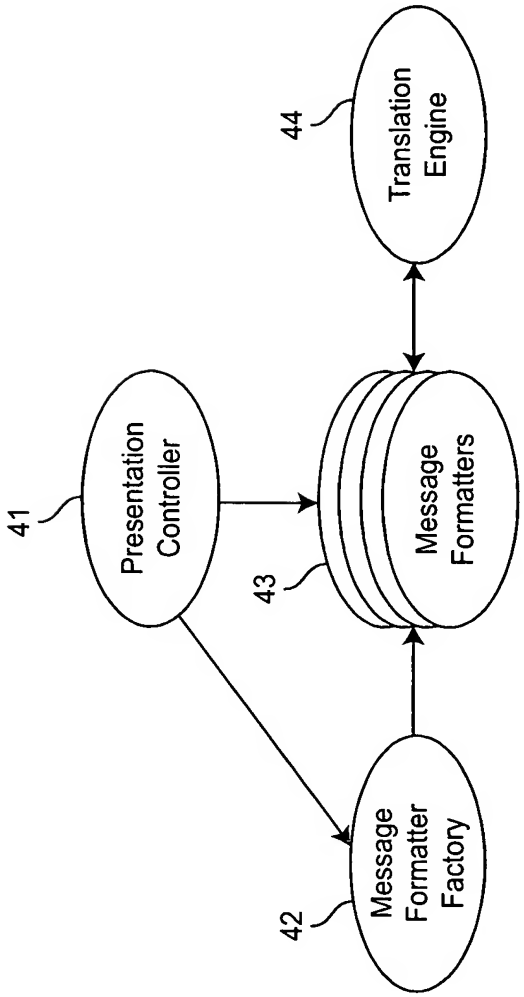
Translation Engine
44
Presentation Controller
41
Message Formatters
43
Message Formatter Factory
42

FIGURE 4

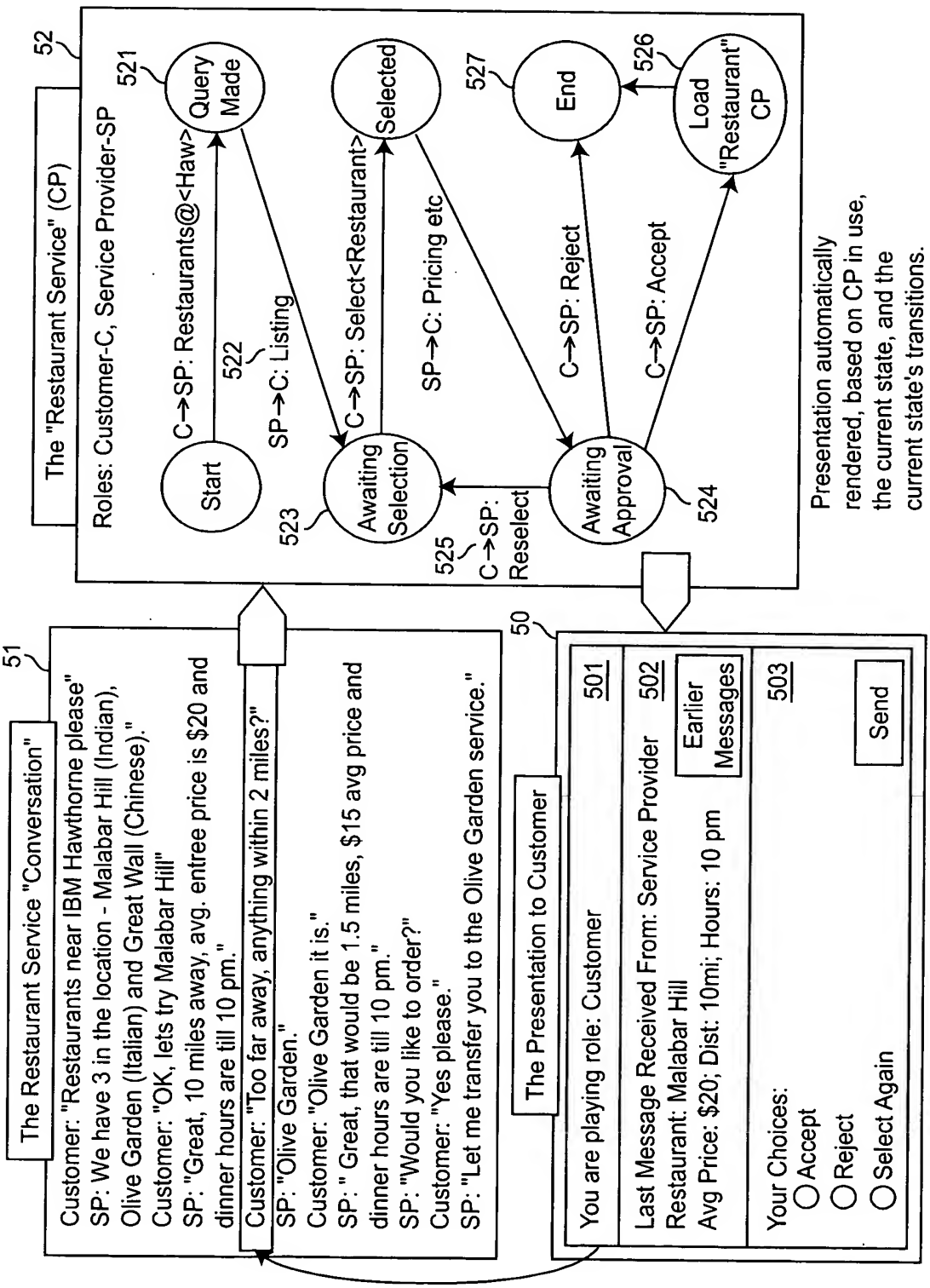
The "Restaurant Service" (CP)
52
Roles: Customer-C, Service Provider-SP
Start
Query Made
521
Awaiting Selection
523
Selected
Awaiting Approval
524
End
527
Load "Restaurant" CP
526
C→SP: Restaurants@<Haw>
522
SP→C: Listing
C→SP: Select<Restaurant>
SP→C: Pricing etc
C→SP: Reject
C→SP: Accept
525
C→SP: Reselect
Presentation automatically rendered, based on CP in use, the current state, and the current state's transitions.
The Restaurant Service "Conversation"
51
Customer: "Restaurants near IBM Hawthorne please"
SP: We have 3 in the location - Malabar Hill (Indian), Olive Garden (Italian) and Great Wall (Chinese)."
Customer: "OK, lets try Malabar Hill"
SP: "Great, 10 miles away, avg. entree price is $20 and dinner hours are till 10 pm."
Customer: "Too far away, anything within 2 miles?"
SP: "Olive Garden."
Customer: "Olive Garden it is."
SP: " Great, that would be 1.5 miles, $15 avg price and dinner hours are till 10 pm."
SP: "Would you like to order?"
Customer: "Yes please."
SP: "Let me transfer you to the Olive Garden service."
The Presentation to Customer
50
You are playing role: Customer
501
Last Message Received From: Service Provider
502
Restaurant: Malabar Hill
Avg Price: $20; Dist: 10mi; Hours: 10 pm
Earlier Messages
Your Choices:
Accept
Reject
Select Again
503
Send

FIGURE 5

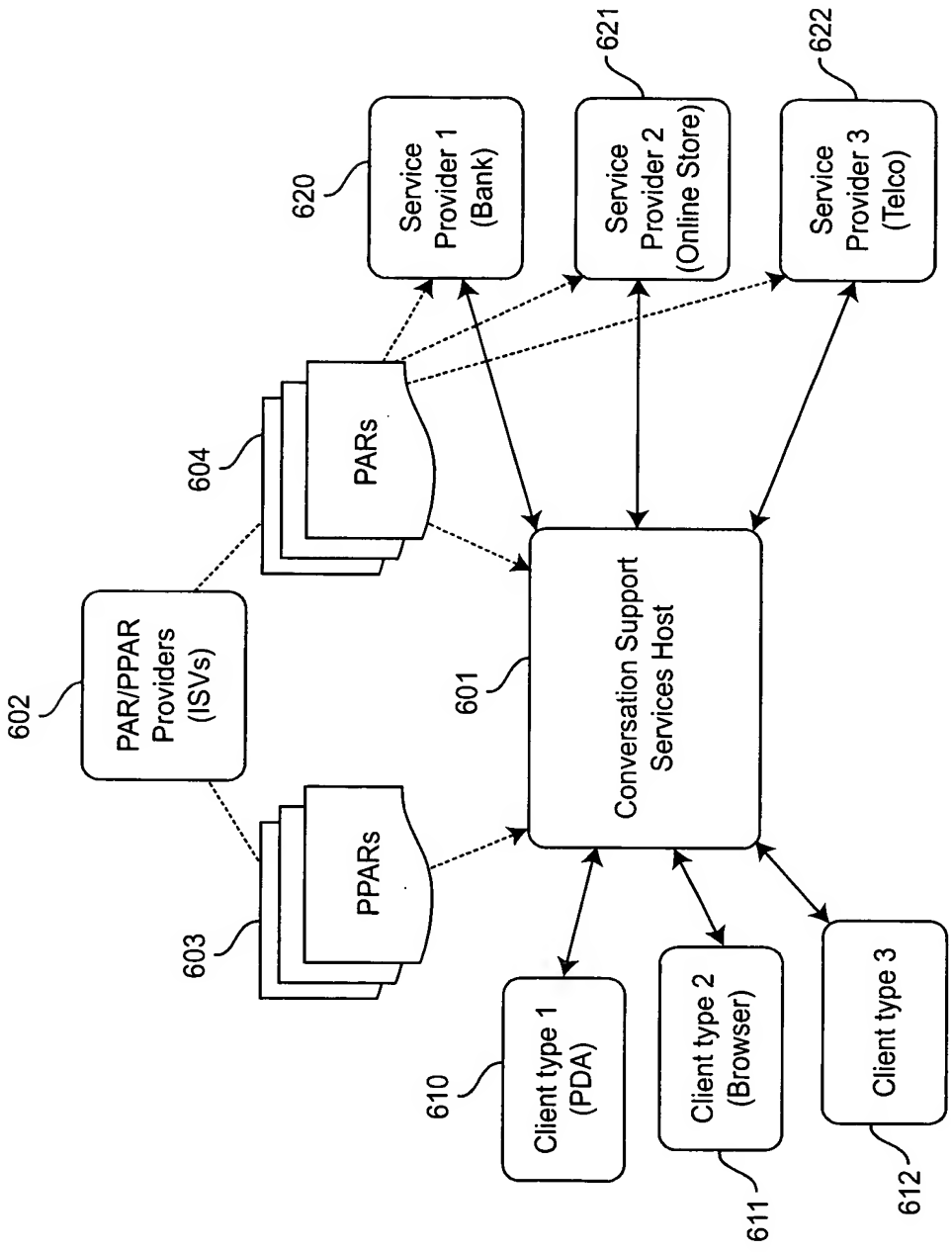
Service Provider 1 (Bank)
620
Service Provider 2 (Online Store)
621
Service Provider 3 (Telco)
622
PARs
604
PAR/PPAR Providers (ISVs)
602
Conversation Support Services Host
601
PPARs
603
Client type 1 (PDA)
610
Client type 2 (Browser)
611
Client type 3
612

FIGURE 6

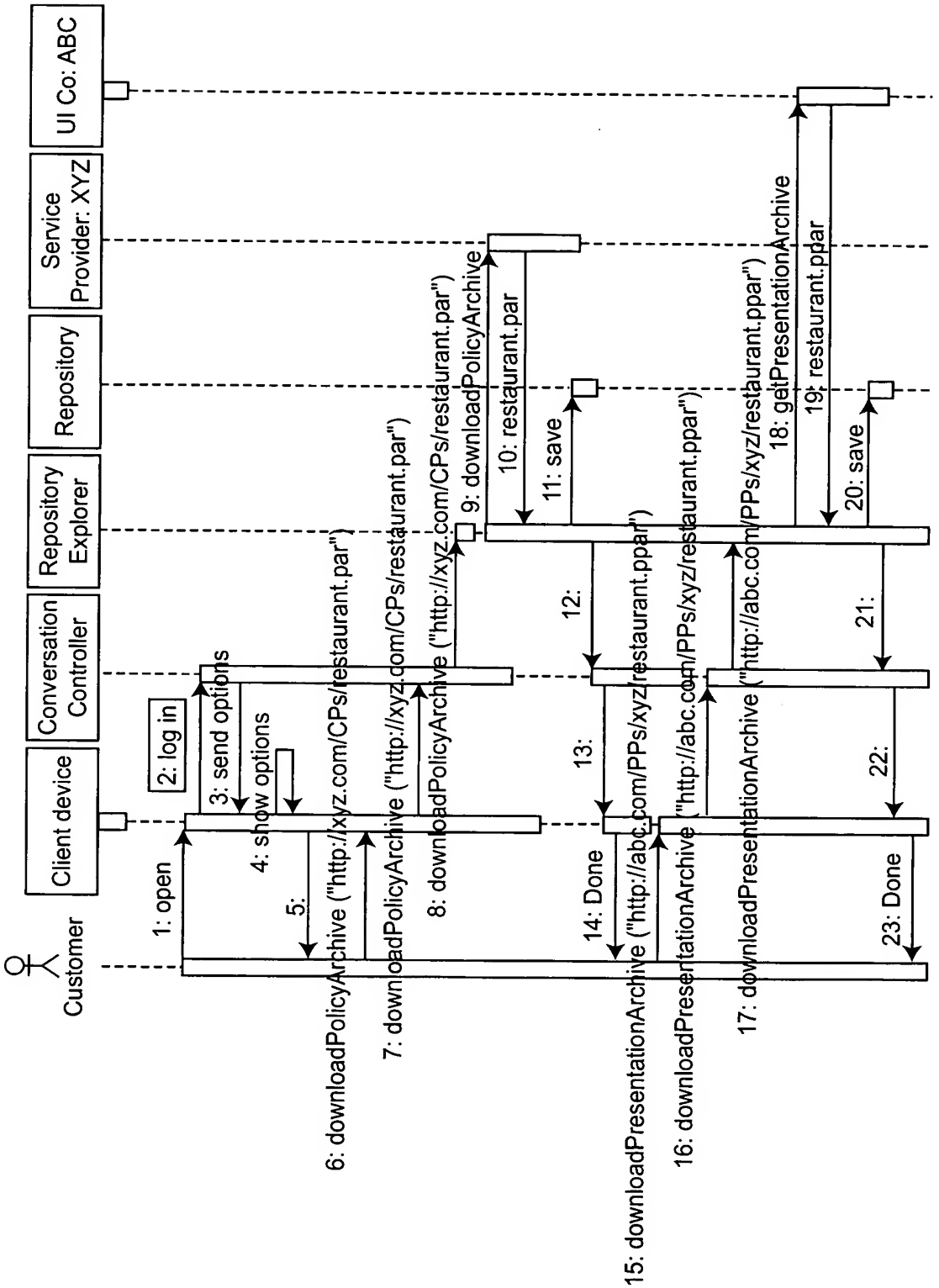
Customer
Client device
Conversation Controller
Repository Explorer
Repository
Service Provider: XYZ
UI Co: ABC
1: open
2: log in
3: send options
4: show options
5:
6: downloadPolicyArchive ("http://xyz.com/CPs/restaurant.par")
7: downloadPolicyArchive ("http://xyz.com/CPs/restaurant.par")
8: downloadPolicyArchive ("http://xyz.com/CPs/restaurant.par")
9: downloadPolicyArchive
10: restaurant.par
11: save
12:
13:
14: Done
15: downloadPresentationArchive ("http://abc.com/PPs/xyz/restaurant.ppar")
16: downloadPresentationArchive ("http://abc.com/PPs/xyz/restaurant.ppar")
17: downloadPresentationArchive ("http://abc.com/PPs/xyz/restaurant.ppar")
18: getPresentationArchive
19: restaurant.pdar
20: save
21:
22:
23: Done

FIGURE 7

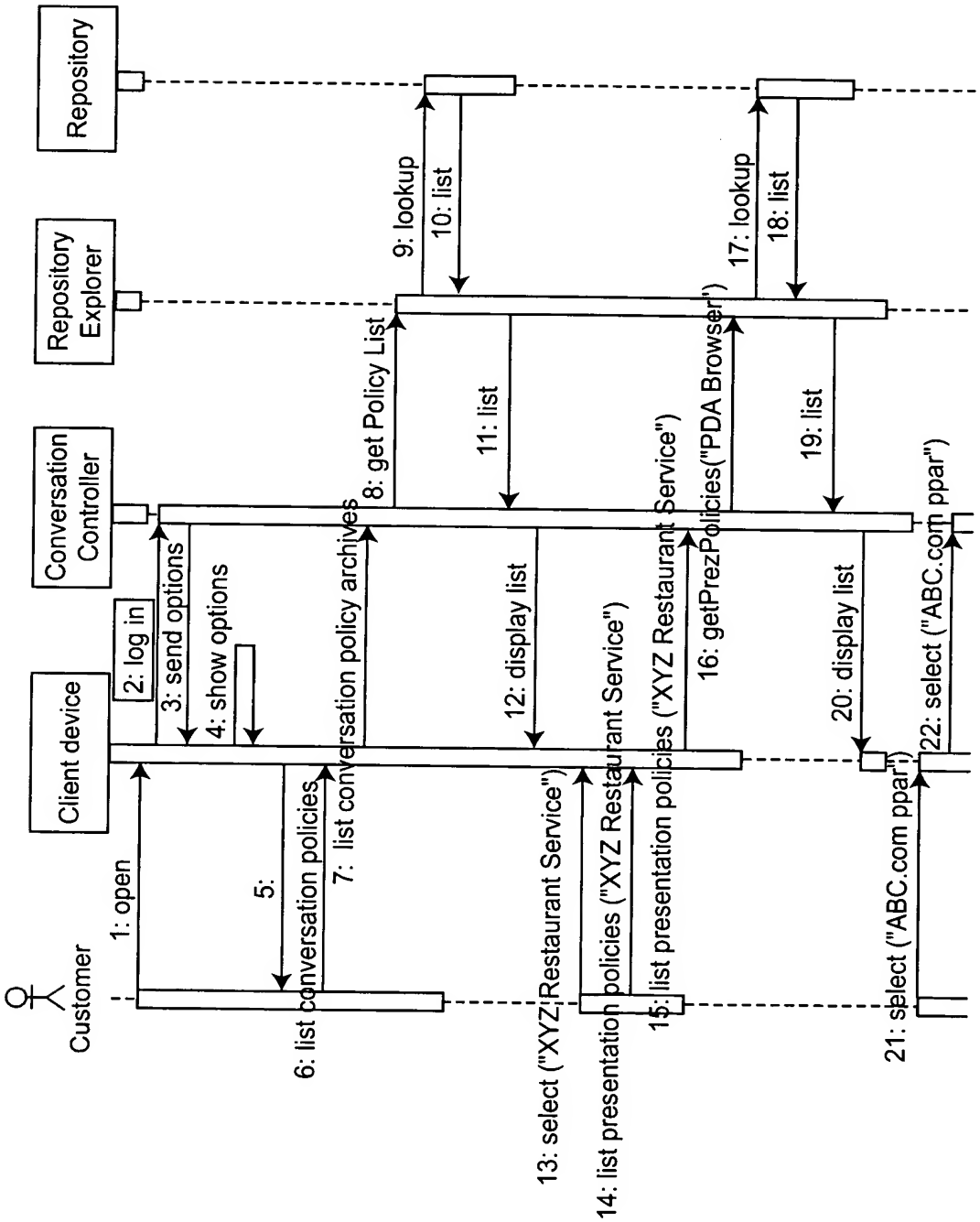
Repository
Repository Explorer
Conversation Controller
Client device
Customer
1: open
2: log in
3: send options
4: show options
5:
6: list conversation policies
7: list conversation policy archives
8: get Policy List
9: lookup
10: list
11: list
12: display list
13: select ("XYZ Restaurant Service")
14: list presentation policies ("XYZ Restaurant Service")
15: list presentation policies ("XYZ Restaurant Service")
16: getPrezPolicies("PDA Browser")
17: lookup
18: list
19: list
20: display list
21: select ("ABC.com ppar")
22: select ("ABC.com ppar")

FIGURE 8

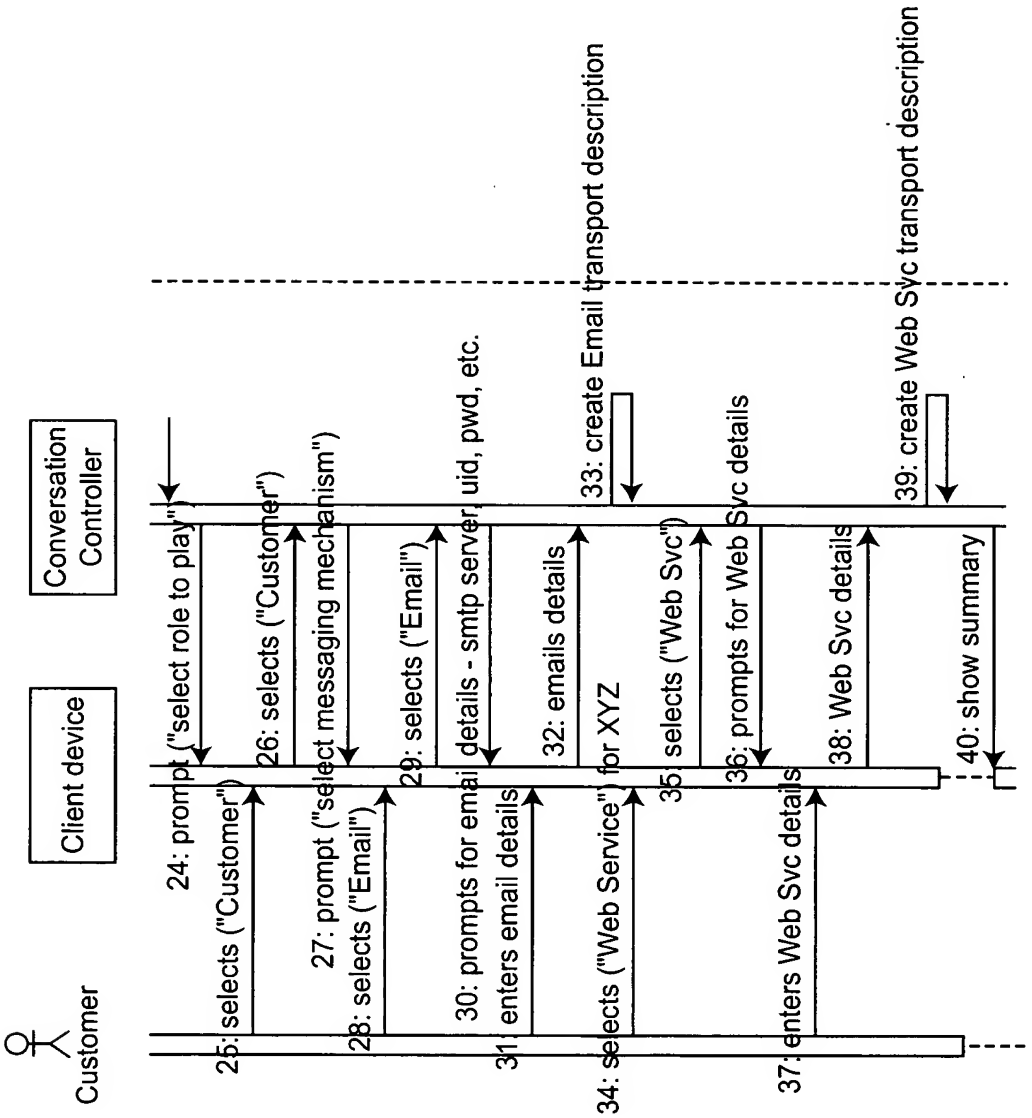
Customer
Client device
Conversation Controller
24: prompt ("select role to play")
25: selects ("Customer")
26: selects ("Customer")
27: prompt ("select messaging mechanism")
28: selects ("Email")
29: selects ("Email")
30: prompts for email details - smtp server, uid, pwd, etc.
31 enters email details
32: emails details
33: create Email transport description
34: selects ("Web Service") for XYZ
35 selects ("Web Svc")
36: prompts for Web Svc details
37: enters Web Svc details
38: Web Svc details
39: create Web Svc transport description
40: show summary

FIGURE 9

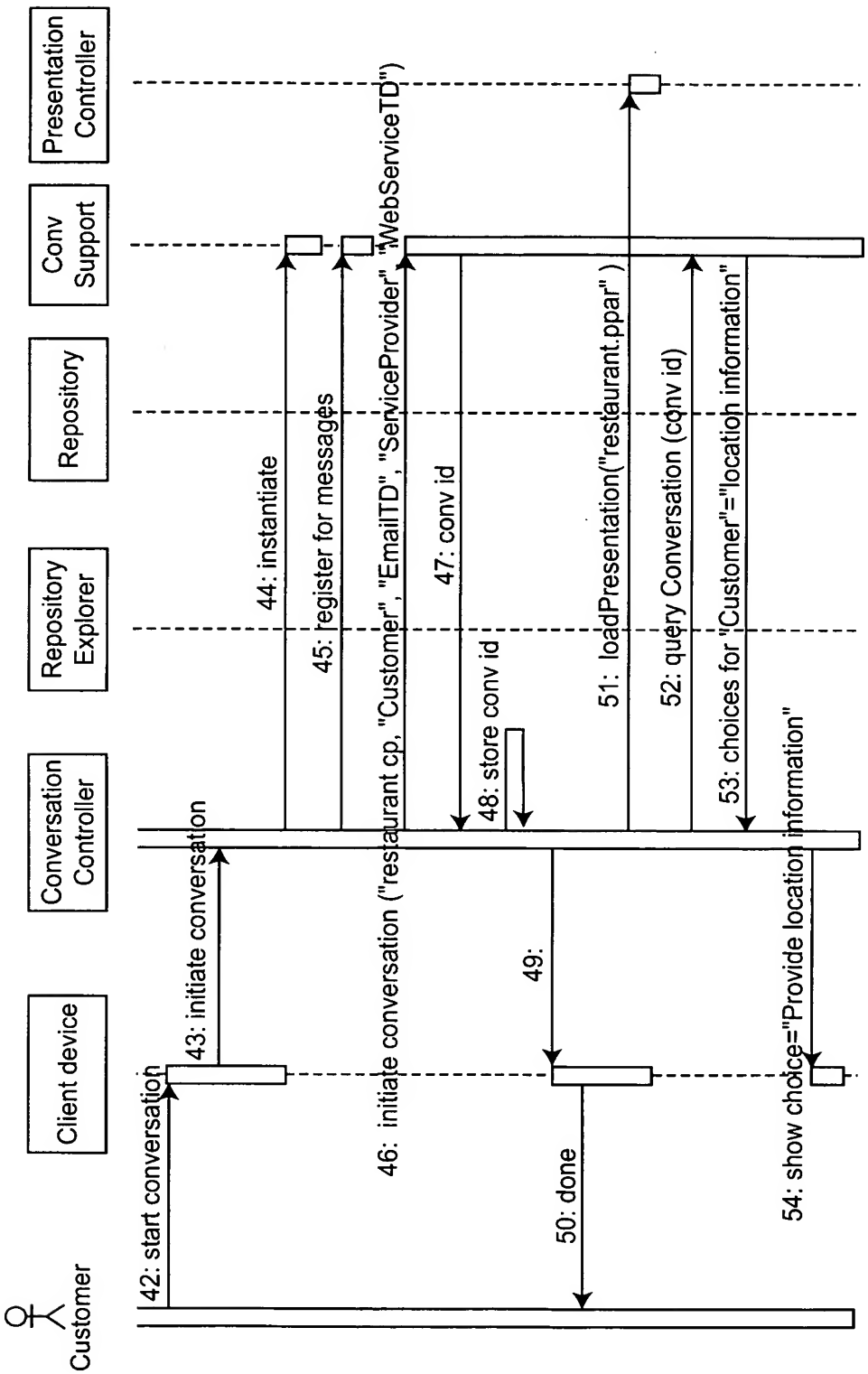
Customer
Client device
Conversation Controller
Repository Explorer
Repository
Conv Support
Presentation Controller
42: start conversation
43: initiate conversation
44: instantiate
45: register for messages
46: initiate conversation ("restaurant cp, "Customer", "EmailTD", "ServiceProvider" "WebServiceTD")
47: conv id
48: store conv id
49:
50: done
51: loadPresentation("restaurant.ppar")
52: query Conversation (conv id)
53: choices for "Customer"="location information"
54: show choice="Provide location information"

FIGURE 10

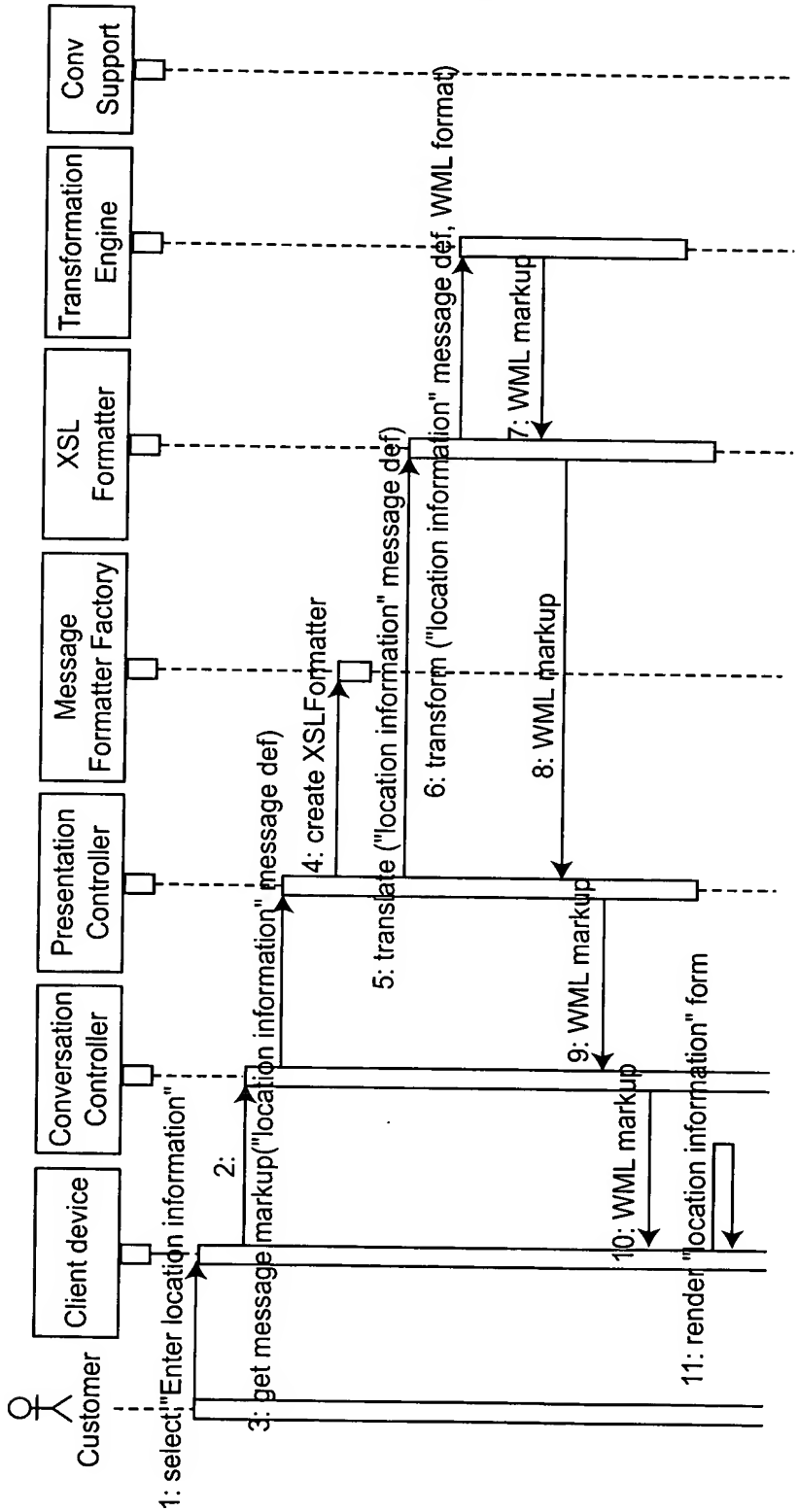
Customer
Client device
Conversation Controller
Presentation Controller
Message Formatter Factory
XSL Formatter
Transformation Engine
Conv Support
1: select "Enter location information"
2: markup("location information" message def)
3: get message
4: create XSLFormatter
5: translate ("location information" message def)
6: transform ("location information" message def, WML format)
7: WML markup
8: WML markup
9: WML markup
10: WML markup
11: render "location information" form

FIGURE 11

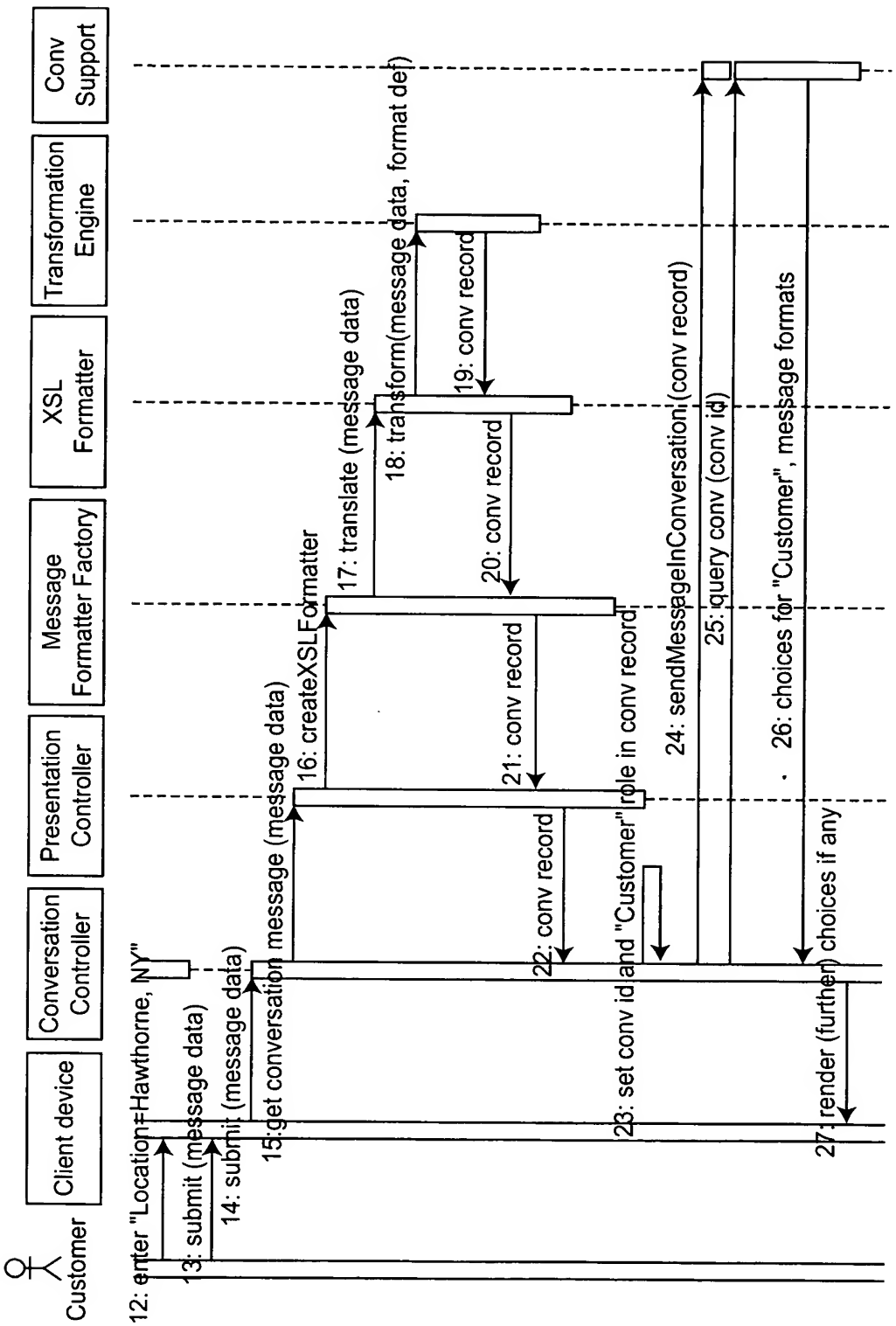
Customer
Client device
Conversation Controller
Presentation Controller
Message Formatter Factory
XSL Formatter
Transformation Engine
Conv Support
12: enter "Location=Hawthorne, NY"
13: submit (message data)
14: submit (message data)
15: get conversation message (message data)
16: createXSLFormatter
17: translate (message data)
18: transform(message data, format def)
19: conv record
20: conv record
21: conv record
22: conv record
23: set conv id and "Customer" role in conv record
24: sendMessageInConversation (conv record)
25: query conv (conv id)
26: choices for "Customer", message formats
27: render (further) choices if any

FIGURE 12

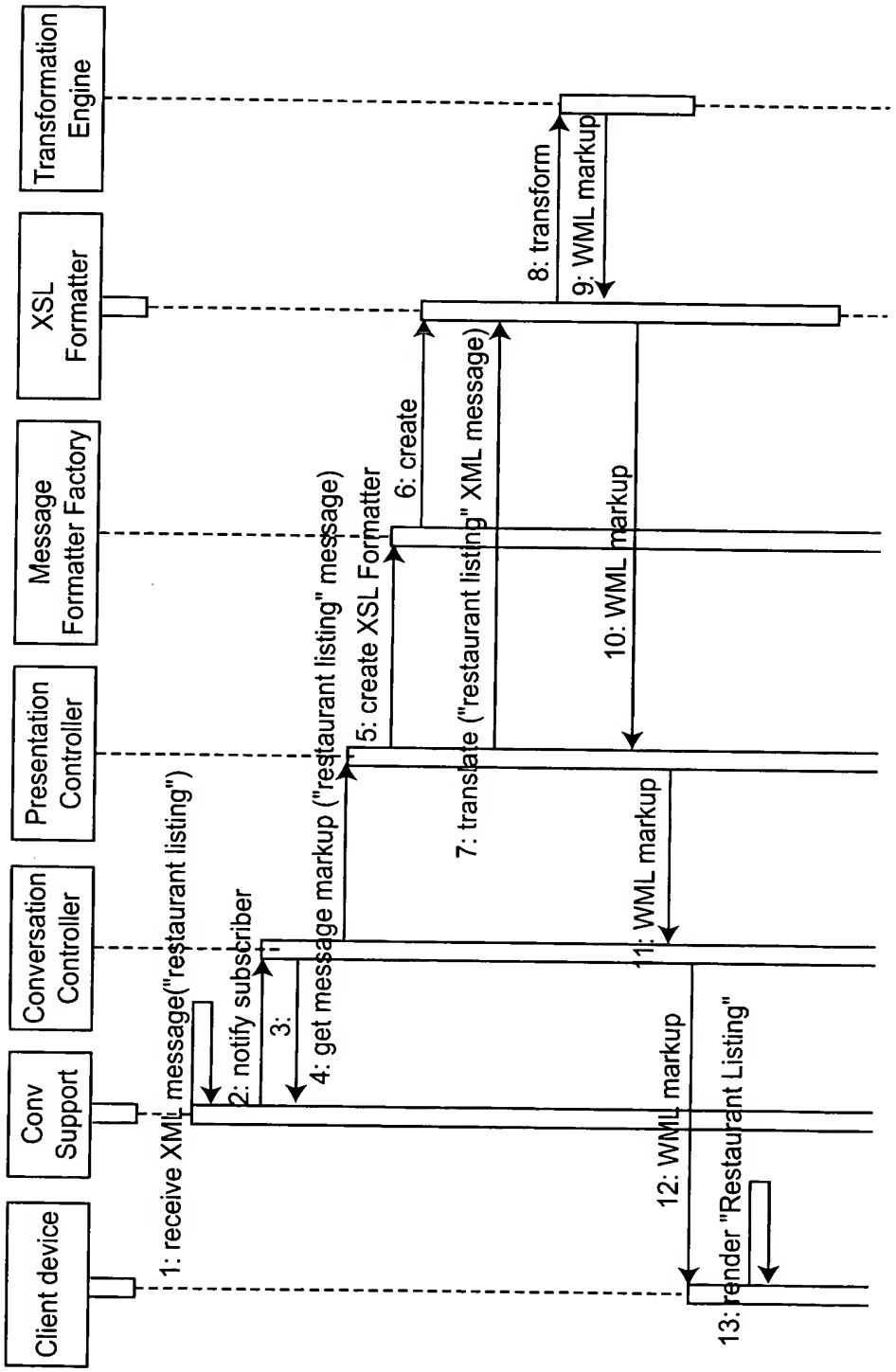
Client device
Conv Support
Conversation Controller
Presentation Controller
Message Formatter Factory
XSL Formatter
Transformation Engine
1: receive XML message("restaurant listing")
2: notify subscriber
3:
4: get message markup ("restaurant listing" message)
5: create XSL Formatter
6: create
7: translate ("restaurant listing" XML message)
8: transform
9: WML markup
10: WML markup
11: WML markup
12: WML markup
13: render "Restaurant Listing"

FIGURE 13

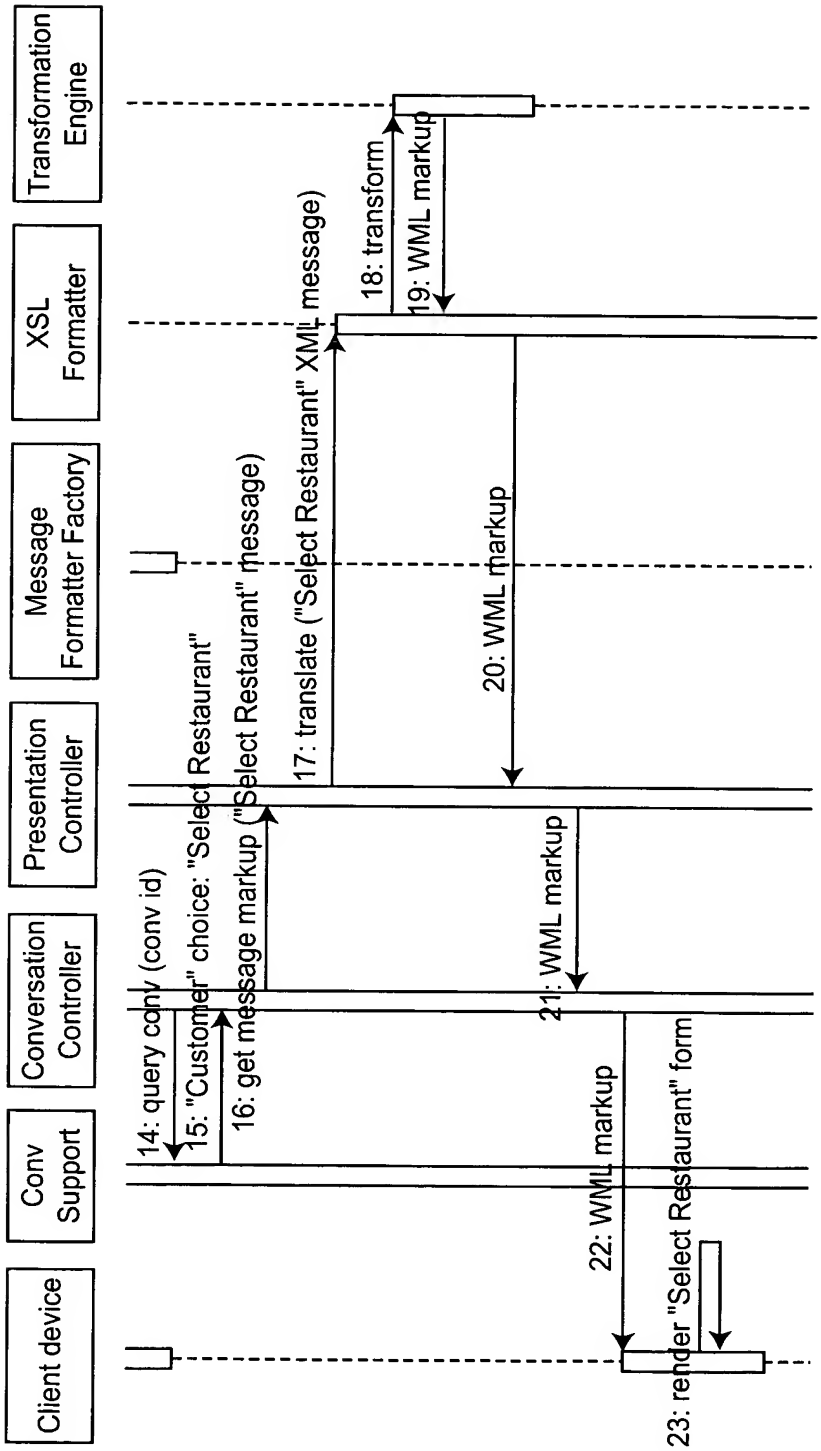
Client device
Conv Support
Conversation Controller
Presentation Controller
Message Formatter Factory
XSL Formatter
Transformation Engine
14: query conv (conv id)
15: "Customer" choice: "Select Restaurant"
16: get message markup ("Select Restaurant" message)
17: translate ("Select Restaurant" XML message)
18: transform
19: WML markup
20: WML markup
21: WML markup
22: WML markup
23: render "Select Restaurant" form

FIGURE 14

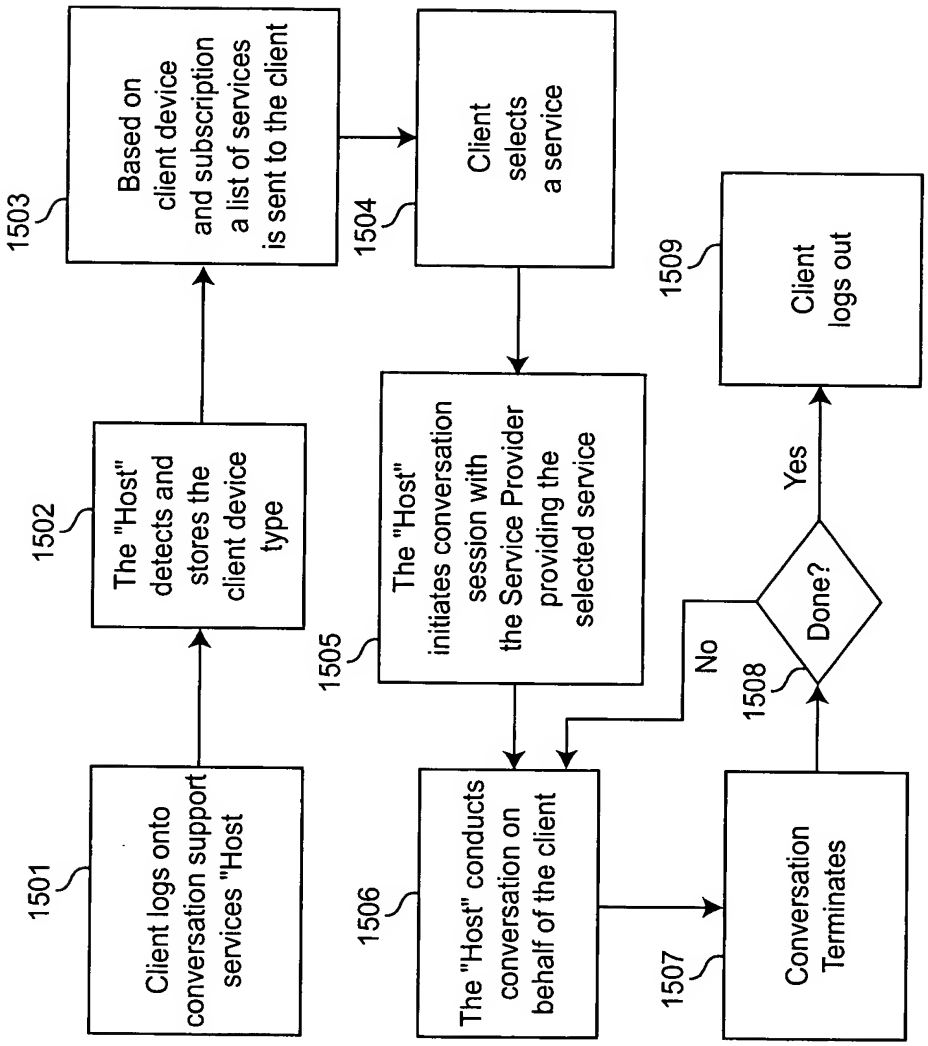
Client logs onto conversation support services "Host
1501
The "Host" detects and stores the client device type
1502
Based on client device and subscription a list of services is sent to the client
1503
Client selects a service
1504
The "Host" initiates conversation session with the Service Provider providing the selected service
1505
The "Host" conducts conversation on behalf of the client
1506
Conversation Terminates
1507
Done?
1508
No
Yes
Client logs out
1509

FIGURE 15